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BOTANY.

Coloring and Drying of Natural Flowers.—Mr. Muir gives the following abstract of this paper, by E. Puscher (Dingl. Polyt. J. ccv, 391–2.) The flowers are placed in a glass funnel, which is inverted over a plate containing a few drops of sal ammoniac solution. After a few minutes, most blue violet or bright carmine-colored flowers change to a Schweinfurt green; dark carmine flowers become black, white change to sulphur-yellow. The flowers plunged into fresh water retain their new colors for 2–6 hours, and then lose them. By a somewhat similar treatment with hydrochloric acid, many flowers, especially asters, may be colored a beautiful red, which is lasting after the flowers are carefully dried.

The Influence of Colored Light on Assimilation by Plants.—E. Lommel (Pogg. Ann. cxlv, 442.) (Abstr. by E. Kinch.) enumerates many of the conclusions arrived at by different experimenters on this subject, and considers it a well-ascertained fact that the greatest amount of decomposition is produced by those rays which are absorbed by chlorophyll, and have at the same time a high mechanical intensity. Solid chlorophyll shows the absorption bands ii, iii, and iv, but very much less plainly than a solution of chlorophyll, because the white light which passes between the interstices of the chlorophyll cells usually forms a continuous spectrum over the absorption bands, and so dims or wholly obliterates the paler ones, whilst the band i suffers only a slight diminution in intensity. The theory of the author is supported by the direct experiments of N. J. C. Müller (Bot. Untersuchungen, Heidelb. 1871) and by the following experiment.

Two similar bean-plants were placed in frames, the sides and top of the first of which were composed of a combination of blue cobalt glass and red copper glass, which allowed only the red rays between *A* and *B* to pass through; in the second, a combination of red and violet glass was used, which transmitted only the middle red rays. Both conbinations were so dark that the plants could scarcely be seen from the outside; their power of transmitting heat rays was almost identical. At the end of a week, the first plant was sickly and had not increased in size, whilst the young leaves of the second plant had doubled in size, and it was not to be distinguished from a similar plant kept in diffused daylight. This experiment shows that the middle red rays above can support the growth of a plant, whilst the outer red rays are unable; and also that assimilation is dependent on the quality of the rays and not on the intensity of the light.

W. Pfeffer (in Pogg. Ann. cxlviii, 86–99) interprets Lommel's experiments as only showing that more growth takes place under the influence of the middle red rays, than under that of the outer red rays.

An abstract of Prof. Draper's interesting experiments in the same field will be given in our next number.

MICROSCOPIC PHOTOGRAPHY OF VEGETABLE TISSUES.—Mr. Pedler makes the following synopsis of this sketch, by L. Erkmann. (Zeitsch. Anal. Chem. xi, 395.) The section of the plant or other tissue is to be placed, for a night, in a solution of aniline red, not too concentrated. On washing the tissues with water the non-nitrogenous tissues are left uncolored, whilst the nitrogenous tissues remain colored, there being also a considerable amount of shading. From a negative thus prepared, a positive may be obtained in which the nitrogenous substances are dark and the non-nitrogenous light.

EFFECT OF COAL-GAS UPON TREES AND SHRUBS.—A series of experiments was tried in Berlin in order to determine the amount of damage done to the roots of trees and shrubs by gas escaping from pipes through the soil, and thus coming in contact with them. It was found that even so small a quantity as twenty-five cubic feet per diem, distributed in one hundred and forty-four square feet of ground, and at the depth of four feet (that is, through five hundred and seventy-six cubic feet of earth), killed in a short time the rootlets of trees of every kind which came in contact with it, and that this damage was sooner done, the firmer and closer the surface of the ground above. (Ding. polyt. Journ. ccvi, 345, abstr. by W. Smith).

PLANTS NEW TO GRAY'S MANUAL.—Three years ago, Miss Furbish of Brunswick collected at Boothbay, Maine, specimens of *Odontites rubra*. This is a pretty Euphrasioid plant easily distinguished from the White Mountain *Euphratia officinalis*. Last summer the same plant was collected by Prof. Rockwood, at the same locality. It had been previously detected in Guysborough, Nova Scotia.

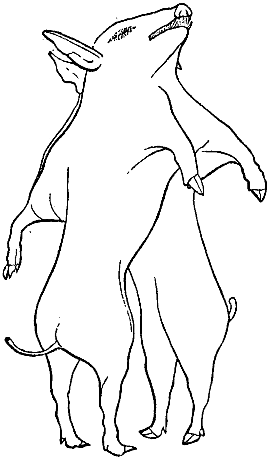
Crepis aurantiaca, formerly called *Hieracium aurantiacum*, appears to be naturalized in some places in Saco, Maine. It occurs in grounds adjoining a nursery, where it is associated with *Ajuga reptans*, a labiate plant. Probably both plants were introduced in the material employed in packing foreign trees.

ZOOLOGY.

A Remarkable Monstrosity.— I submit the history, anatomical examination and physiological peculiarities of this case of *lusus naturæ*, as one of especial interest to embryologists.

The subject, or subjects, are a pair of twin pigs united throughout the anterior abdominal, thoracical, cervical and cranial regions, having one umbilicus in common. As they now stand (Fig. 74), taxidermy having been resorted to, to preserve them, to ordinary observers, at first sight, their conjoint bodies present the appearance of two individuals standing face to face, being in juxtaposition above the umbilicus, with arms extended at right angles. Below the inferior point of union both are perfectly normal; above this region the front side * resembles the inferior part of the thorax of a normally formed hog. The back side presents the same thoracic appearance, but above it is seen the top of the head (the region posterior and between the ears in a normally formed hog) with two ears in juxtaposition at their point of junction with the head, situated in the median line, one and one-half inches posteriorly to the ones situated in the normal position.

Fig. 74.



Their external appearance, size, form and color are the same. Both are of the male sex. The head, anteriorly of the conjoint pair of ears, is normal in shape, being but slightly broader in the

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* The terms front, back, etc., relate to the organization as a whole, the four posterior legs occupying the inferior position.